

On this Texas journey we went up the Rio Grande as far as Rio Grande City. In Louisiana I visited Mr. L. S. Frierson and saw his collection of Uniones with great profit. I heard the story of Dr. W. S. Strode of my own State, barefooted, attempting to kick down a cypress knee in Lake St. Charles. These knees in color sometimes do look like a toadstool of tropical growth.

I also learned that Mr. Frierson was well supplied with *Anodonta suborbiculata* Say. He found a fragment of that rare queen of the Anodontas at the edge of a pond near his village and employed a gentleman of color to gather them at a nickel per clam. Two days later the black imp of darkness drove up to his house with a two-horse team, the wagon box full of *A. suborbiculata*.

I did not find Rev. H. E. Wheeler at Arkadelphia, Ark. These Methodist conchologists move too often.

CUBAN COLLECTING; SAN DIEGO DE LOS BANOS.

BY JOHN B. HENDERSON.

Mr. Charles T. Simpson and the writer recently made a collecting trip to San Diego de los Banos. This old and very dilapidated Cuban town is about seventy five miles west of Havana and lies just at the entrance to a pass through the southern range of the Sierra de los Organos and is an admirable starting point for daily collecting excursions into the mountains. This is given as the type locality of a number of species and judging from its frequent reference in Cuban lists it must have been a favorite field for the older collectors who first made known Cuba's remarkable land snail fauna. The actual town itself lies in the lowlands and therefore offers nothing to the collector for Cuba's level plains and valleys are almost destitute of shells. On account of this fact Cuba still maintains three quite distinct land shell faunas, each inhabiting its own mountain system. These three systems were once separated by the sea and developed their own island faunas, but now that a general elevation of the whole region has connected them all by dry land a mingling of the three faunas might naturally be expected. Such, however, is the case only to a very slight extent. The connecting land areas are lowlands,—the tobacco fields, the cane fields and cattle ranges of the island. With a very few exceptions the Cuban land shells can-

not find proper conditions for life in the lowlands and the three mountain faunas of the island are almost as effectually separated as when the sea surrounded them.

The great mountain system of western Cuba (Organos) has suffered rapid erosion and it now happens that whole ranges once a part of the main system have been so cut down by atmospheric forces that they exist today only in the form of more or less detached hills,—or “mogotes” as the natives call them. These mogotes, in point of size, may be quite respectable mountains with all the pinnacles and organ-pipe peaks so characteristic of the region, or they may be but a comparative handful of worn down boulders appearing like a little hump on the level landscape. They are practically always heavily wooded and maintaining as they do all the conditions of life needed by the snails, they possess each and every one a little fauna of its own,—modified, of course, by long isolation from the main range. This accounts in one way for the great richness in Cuba of species. Nature has brought this about by dividing her mollusks into thousands of little preserves and isolating them. As erosion cuts down the mogotes and their quarters become more and more restricted the mollusks that can adapt themselves and fight the battle of life the best, persist,—they generally become smaller in size, while others not so adaptable disappear. Thus every mogote has a surprise or two for the collector,—usually a new species or subspecies of Urocoptis.

In most countries there are certain genera of land or fresh water shells that appear to be especially *plastic* or quick to modify their forms to meet new conditions. In the Bahamas the Cerions, in Europe the Clausilias, in the United States the Pleuroceratidæ and in Cuba the Urocoptis. If these last had received the kind of application that some genera in other parts of the world have received, there would be in Cuba about a thousand species of them,—that is after the mogotes had all been explored. But these Urocoptids have much to tell of what has happened to Cuba in the past. They almost indicate three separate migrations into the island from different sources and at different times. One of these may prove to be along a ridge once connecting Cuba through Camaguay, Santa Clara, and the Isle of Pines with Central America, an immigration quite distinct from the one supposedly into Pinar del Rio from Yucatan. Until the land operculates of Cuba shall have been wholly revised as

to genera they can tell but little, indeed, they can only confuse the student. The names *Chondropoma*, *Choanopoma*, *Colobostylus*, *Tudora*, etc., mean nothing applied indiscriminately as they are.

When Simpson and I first attacked the mountains about San Diego our first impression was that we were gathering the very same species taken before many miles west at Vinales, Sumidero etc., and it was easy to fancy ourselves back in our old haunts of two years ago. We were, however, deceived by the *similarity* only of the species of the two localities. The majority are different species, especially, as one might anticipate, among the Urocoptids. It is only the genera and the sections that are the same.

The delights of mogote collecting are hard to exaggerate, and there are many mogotes all about San Diego de los Banos. Each is a little treasure trove full of life and a bower of tropical luxuriance and we worked them all within a distance of several miles of the town. A day spent on La Guida, a splendid mountain of the main range, will give perhaps a good example of our daily work while at San Diego. An early morning walk of about six miles brings us to the "sacred presence" and we leave the so-called road to ford a river and plunge into the fearful jungle at the base of the mountain. There are no shells in this jungle, but upon reaching the actual base of the mountain great rocks are first met and among them the dead shells give an index to what we may expect when we get up a little higher. Traveling is most difficult here until the first line of rocks is passed and the steep sides are reached. Then somebody picks a *Cepolis parraiana* off a tree and we begin to look sharp for *Liguus*. Then we reach a region of huge masses of limestone broken off and fallen from the great cliffs above, all smothered in vegetation. Here we discover on the rocks and the trees *Urocoptis irrorata* and in the smaller crevices *Urocoptis guirensis*, *saxosa* and one or two closely allied species. Simpson calls out that he has a *Macroceramus (elegans)*, and then we grub for a time in the soil about the bases of the rocks and turn out *Megalomastoma mani* and that splendid *Alcadia (Emoda) sagraiana*, and there are also here many smaller things as *Lyobasis angustata*, *Pichardiella acuticostata* and its curious variety *horrída* of Pilsbry. Climbing still higher we reach the foot of the great perpendicular wall towering naked above us for several hundred feet, and new conditions are at once met. *Eutrochatella regina* is very common and we cease even to gather it. An occa-

sional colony of *Eutrochatella acuminata* keeps our enthusiasm warm, and then we discover a colony of that perfect little gem among land shells, *Eutrochatella chrysochasma*, with its pinkish cast and flaming red aperture. The big *Chondropoma shuttleworthi* are quite abundant and we only take the best looking specimens, but the more rare *Chon. sagebieni* is much more shy; we get but a few of them living. *Annularia blaini* is everywhere, and we tell our Cuban guide not to take any more of them. An occasional *Pleurodonte (Thel.) rangelifiana* with its commoner cousin *Pl. auricoma* is taken. *Oleacina o. straminea* and the smaller *solidula* along with the species that have the incised lines upon their spires are fairly abundant. Less so are the *Rectoleacina cubensis* and *R. episcopalis*, but they are there to be had for the search. Some one warns the rest that it is getting time to pull out for home, and we reluctantly drop the work and scramble back to the river, an hour at least to go half a mile. In the river we enjoy the luxury of a swim in the cool, clear water, and revive our energies for the long "hike" back.

Wherever the naturalist wanders there is always a beyond that is gilded by imagination and mystery. From a high point we could gaze into a beyond of high sierras among which our native guide pointed out the great Pan de Guajaibon, far away and indistinct as a cloud peak above the mass of mountains. Guajaibon has always been our dream mountain for future conquest. It was visited a half century ago by that most enterprising of Cuban collectors, Charles Wright, but since then it has guarded well its conchological treasures.

DISTRIBUTION OF SOME FRESH WATER SHELLS OF THE ST. JOHN'S RIVER VALLEY IN MAINE, NEW BRUNSWICK AND QUEBEC.

BY OLOF O. NYLANDER.

For many years I have been collecting shells in the valley of the St. John's River and its tributaries, the Aroostook and Fish Rivers in Maine, and Madawaska and Green Rivers in New Brunswick and Quebec. Every tributary has some interesting forms, of which many are peculiar to a single locality. Many of the tributaries of St. John's River are in the forest. It is a lumbermen's field for harvest, and great quantities of logs are floated down these rivers every year. Sawmills large and small are to be found nearly every-